

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Vasel et al. )  
Serial No.: 09/289,258 )  
Filed: 4/9/99 )  
For: NON-LETHAL PROJECTILE )  
FOR DELIVERING AN )  
INHIBITING SUBSTANCE TO )  
A LIVING TARGET )  
Group Art )  
Unit: 3641 )  
Examiner: Tudor, H. )

DECLARATION PURSUANT TO 37 C.F.R. § 1.132

Hon. Commissioner for Patents  
Washington, D.C. 20231

Sir:

I, Charles N. Mills, declare as follows:

1. I am currently the Director of Judgmental Training with the Prince George's County Police Department, Upper Marlboro, Maryland. I have been in this position for about 1½ years. Prior to my current position, I was the Acting Director of Judgmental Training with the Prince George County Police Department for 1½ years.

2. I have 25 years of experience in law enforcement including 14 years as a Firearms Instructor and 7 years as a Chemical Agents Instructor. I am also certified as a Firearms Instructor by the U.S. Secret

Service and certified as a Chemical Agents Instructor by the F.B.I. I am also a Pepperball instructor, a Taser instructor, an OC chemical agents instructor. I also have 11 years of experience in tactical SWAT team training and operations. Additionally, I have instructed Use of Force/Deadly Force Training Programs to five foreign countries for the U.S. State Department. My resume is attached as Exhibit A.

3. I have worked 25 years in the area of less-lethal weapons for tactical and patrol use and am considered an expert in the field of less-lethal weapons. I have been recognized as an expert witness for police use of force/deadly force in both State and Federal Courts in four cases.

4. I am familiar with less-lethal or non-lethal weapons as an alternative to lethal weaponry. Less-lethal weapons are used to stop or detain a suspect where lethal force may or may not be warranted. Also, less-lethal weapons are used to de-escalate situations before deadly force is required.

5. There is a widely known need in law enforcement for a less-lethal device that can be safely and easily used by patrol officers, that can be used in a number of situations, that can be used quickly and effectively, and that is truly not lethal.

6. I have tested dozens of less-lethal devices over the last 15 years, such as chemical OC sprays, tasers, tear gas, and bean bag guns. Although each of

these devices can be effective in specific situations, none of these devices, or any other of which I am aware, are totally effective for everyday use by a patrol officer in a variety of situations, including both long range and short range uses. In other words, these products do not satisfy the long recognized need in law enforcement.

7. It is well known that chemical agents can be very effective as a less-lethal device. It is also well recognized in law enforcement that the devices for delivering chemical agents, such as aerosol spray canisters and tear gas, are not effective in several situations and raise significant decontamination and cross contamination issues. There has been a longstanding need to provide a less-lethal device that will deliver a chemical agent or irritant that may be used in many applications while minimizing decontamination and cross contamination issues.

8. As a Chemical Agents Instructor, I am familiar with different types of chemical agents that may be employed against a suspect, such as liquid OC spray and tear gas to inhibit, stun or otherwise stop a suspect. Although each of these chemical agent products may be effective in certain situations, none of these products satisfies this long recognized need for an effective, multi-use chemical agent less-lethal device, tool or system.

9. Recently, a product referred to as the Pepperball product has become commercially available for

law enforcement. The Pepperball product is sold by Jaycor Tactical Systems, Inc. of San Diego, CA. I first became aware of the Pepperball product at a demonstration at the Instructor School for the Maryland Police Training Commission on about July 7, 2000. The Pepperball product delivers a powdered pepper substance within a frangible projectile fired by a compressed gas launcher, such as a paintball launcher. When the projectile impacts the target, the projectile shatters releasing the powder irritant in a cloud or fog that surrounds the target, and is then inhaled by the target and/or gets into the target's eyes. This cloud then disperses quickly, allowing the law enforcement officer to apprehend the person without any special equipment (such as a mask or gloves).

10. The Pepperball product provides a solution to these longstanding needs. The Pepperball product solves the problems of the known less lethal devices, and as a result, provides superior performance in more applications. The advantages and features provided in the Pepperball product have been sought for years in the law enforcement community, and to my knowledge, until the Pepperball product was introduced, no satisfactory solution was available.

11. Based upon our own testing, our Department now issues one Pepperball gun to each squad of patrol officers for a total of 79 guns on the street. Since November of 2000, our Officers have reported 16 deployments of the Pepperball system. Six of these instances probably would have escalated into the use of

deadly force by the officers since in four cases, the suspect was armed with a knife, in one case, the suspect was armed with a glass edge, and in another case, the suspect was even armed with a gun. Of these 16 instances, the Pepperball product was effectively used to detain the suspect without escalation or resort to deadly force in every case.

12. I believe there are several reasons why the Pepperball product is so effective. One reason the Pepperball is effective is that the product delivers a chemical irritant to the target within a projectile. This allows an officer to launch the Pepperball product at a target from relatively long ranges, such as 20-30 feet, without requiring that the officer be within close proximity to the target. In contrast, an officer must be in close proximity to the target when using a taser or OC spray canisters. An officer must be close to use the OC spray since the spray will only spray a certain distance. Furthermore, at longer ranges, it is difficult to target the suspect's face with an OC spray. Tasers are devices shooting two tethered electrodes at a suspect. Each of these electrodes must contact the suspect's skin in order to administer the electrical charge. Thus, each tethered electrode must penetrate any clothing the suspect is wearing. Furthermore, from distance greater than about 18 feet, these electrodes tend to fly apart. The further away from the suspect, the less likely that both electrodes with contact the suspect.

13. Another reason the Pepperball product is effective is that it delivers a powdered irritant. When

the projectile impacts the target, the projectile shatters releasing the powdered irritant. The powdered irritant quickly releases as a cloud that surrounds the target, so that the target is forced to inhale the powdered irritant.

14. Since the irritant is a powder and forms a cloud, the body of the suspect can be targeted. For example, if the suspect is struck in the chest or stomach, the powder creates a cloud that expands so that the suspect breathes the powdered irritant. In contrast, OC spray canisters must be sprayed so that the liquid irritant contacts the suspects face and/or eyes. For example, OC spray is not an effective inhibitor if the suspect is sprayed in the chest or stomach since the OC spray does not contact the suspect's mouth, nose or eyes.

15. Since the irritant is a powder, a direct hit of the suspect is not even required for the Pepperball to be effective. A target proximate to the suspect can be impacted, such as a wall or ceiling near the suspect, which will form the powdered cloud. In one of the deployments mentioned above, the suspect hid under a staircase in an apartment complex and refused to come out. Several Pepperball rounds were fired at surfaces of the staircase which caused the suspect to come out without struggle. In comparison, OC sprays and tasers require that the officer be in close proximity to the suspect, thus, increasing the risk of harm to the officer. Also, OC sprays and tasers require a direct hit of the suspect to be effective.

16. The powdered irritant also quickly settles after use. For example, within a short period of time, the powdered cloud settles on the suspect or the ground. In comparison, tear gas can linger in the air causing cross contamination. Cross contamination is a problem where others, such as innocent bystanders and the officers themselves, are affected by the chemical irritant when breathing the air or touching the suspect. Cross contamination is also a problem with OC sprays in that the officer may be exposed to the chemical agent when handling the suspect. Frequently, officers must use special equipment, such as masks or gloves when handling the suspect or detaining the suspect.

17. Also, the powder irritant allows for easy decontamination of the suspect. This is because the powder does not stick to the suspect's skin upon use. The powdered irritant can simply be brushed, dusted or rinsed off of the suspect after the suspect is detained. In comparison, an aerosol or OC spray in a fluid form sticks to the suspects face and body. As a result, officers must decontaminate the suspect prior to handling the suspect or bringing the suspect to the Police Station. Officers often have to flush the suspects face and eyes, and even provide medical treatment to the suspect. Again, officers might require special equipment, such as masks or gloves, in order to minimize the effect of the OC spray on the officers.

18. To my knowledge, the Pepperball product is the first less-lethal product on the market for patrol use that delivers a powdered irritant to the suspect

within a projectile. Other chemical agent less-lethals involve the use of fluid irritant (OC spray) or gas irritants (tear gas), which are not nearly as effective as the powdered irritant of the Pepperball product.

19. Furthermore, I am aware of projectiles for tactical use that employ a powdered inhibiting substance. These projectiles are commonly launched from 37 mm and 40 mm projectile launchers and are designed to impact a non-human target, remaining intact upon impact. Then upon the detonation of a secondary charge within the projectile, the chemical agent is released. These projectiles are designed to break through windows and doors, for example. The launchers and projectiles are too cumbersome for everyday patrol use. Furthermore, they are not designed to be impacted with a living person and contain a secondary charge within the projectile in order to disperse the chemical agent.

20. It is my opinion that even if a product existed that was similar to Pepperball; however, delivered a liquid or fluid irritant, that this liquid irritant would not be nearly as effective as the powder-filled Pepperball. First, the liquid irritant would not disperse and create a cloud, like the powdered irritant. In contrast, the liquid irritant would splatter and stick to the part of the suspect that is struck. In order to be effective, the liquid product would have hit the suspect in the face, increasing the risk of serious injury to the suspect. Also, an indirect hit would not be effective, again, since a cloud that might be inhaled is not formed. And, the liquid irritant would be more



difficult to decontaminate, increasing the risk of cross contamination.

21. Another reason I believe that the Pepperball is effective is that it may be launched from a compressed gas launcher or a paintball gun. This allows for easy operation and simple training. More officers can be trained using a paintball gun, since it does not have the recoil or kick that a bean bag shotgun provides. Many officers do not qualify to carry a shotgun for firing bean bag shotgun rounds, particularly officers smaller in stature, due to the qualifications needed for shotgun certification and use.

22. Also, since the Pepperball launcher is a modified paintball launcher, the Pepperballs may be launched at close range, as well as long range. Generally, the kinetic impact of the Pepperball is much less than that provided by a bean bag gun. For example, a bean bag shotgun round provides a kinetic impact of about 120 ft-lbs, whereas the Pepperball gun provides a kinetic impact of about 8-12 ft-lbs. Therefore, the Pepperball product is safe to launch, even at point blank range. On the other hand, bean bags shotgun rounds may overpenetrate and result in fatalities. There have been at least seven recorded deaths across the country resulting from the use of bean bag shotgun rounds.

23. The kinetic impact provided by a direct hit also assists in the effectivity since enough kinetic energy is provided to stun the suspect without seriously injuring the suspect. This kinetic impact often slows or

stops the suspect, which allows the powder to be easily inhaled by the suspect.

24. The combination of the kinetic impact and the effect of the powdered chemical agent yield a weapon that is more effective than either the kinetic impact or the chemical agent alone. I believe this is because the kinetic impact slows or stuns the suspect, so that the chemical agent is more effective, and the chemical agent causes a panic-like reaction. This combination of powdered chemical agent (OC) and kinetic impact makes the Pepperball a very effective tool for patrol usage.

25. Yet another reason the product is effective is that with some compressed gas launchers, the projectiles may be fired at rates of up to about 6-12 projectiles per second. This provides an enhanced kinetic impact and corresponding stunning effect on the suspect. It also increases the amount of powder within the powder cloud. The size of the dispersing powder cloud is also increased, making it more likely that the suspect will inhale the powdered irritant. Many other products can only be fired once, such as the taser, or fired at a limited rate, such as bean bag shotgun rounds.

26. Through my experience and use of the Pepperball system, I believe that with proper use, that the Pepperball product is non-lethal, as opposed to less-lethal. That is, in most conceivable uses, the Pepperball product should not result in death.

27. In comparison to the known less-lethal devices, the Pepperball product fills the long recognized need in law enforcement for a non-lethal device that has many applications, is easy to use, and is effective for everyday patrol use.

28. In comparison to known chemical agent non-lethals, the Pepperball product satisfies the recognized need in law enforcement to provide a non-lethal device that delivers a chemical irritant that may be used in many applications, is easy to use, and is effective, without causing significant cross contamination and decontamination problems.

29. At the Prince George County Police Department, we have been very pleased with the results of the Pepperball product. Of the 16 deployments, the Pepperball product has been very effective every time in a variety of situations. Due to the Pepperball product's effectivity, we currently have plans to double the number of Pepperball launchers in use by our officers.

30. I am not aware of any other projectile devices on the market for patrol use, other than the Pepperball product, that use an inhibiting substance in powder form. Known systems are liquid-based, and are not near as effective as the Pepperball product.

31. I have reviewed a copy of the Carbone patent that was cited in the rejection of a patent application in which the Pepperball product is described. I have paid particular attention to the portion of the

Carbone patent that has been asserted to describe the invention. I have interpreted this portion in the context of the Carbone patent and the general knowledge in the field at the time the Carbone patent was written and issued. This portion refers to "thin-walled balls containing substances that are ejected upon impact of the fired ball, such as marking dyes, or paints or irritants, such as pepper or teargas or the like".

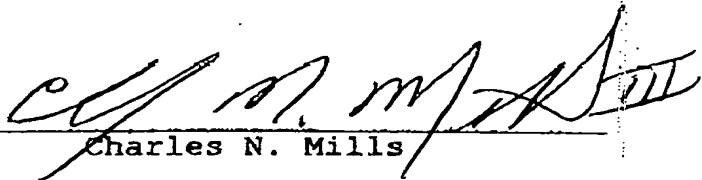
32. The context of the description of the Carbone projectile is that of riot and crowd control by law enforcement personnel. In this context, the term "pepper" is well accepted among the law enforcement community to refer to an irritant that is in a liquid or gas form. As an irritant for law enforcement use, pepper is commonly used as a pepper spray. In other words, a liquid pepper substance derived from the oily extract of pepper plants, is contained under pressure with a gas and released as a spray. Thus, in the context of the Carbone patent, as understood in the art, the irritant pepper refers to a liquid or gas, not a powder.

33. The Carbone patent only refers to liquid and gas substances within the projectiles, not powder. For example, at Column 1, lines 13-23, Carbone describes that cartridges containing paint and other *fluid containing* ball projectiles have been widely used. It also states that such devices are particularly useful for police, military and other law enforcement. Thus, I believe that Carbone is referring to liquids when using the term pepper.

34. The Carbone patent was filed December 10, 1993 and issued November 8, 1994. At that time, to the best of my knowledge, there were no less-lethal devices for law enforcement patrol use using a powdered pepper as an irritant. Thus, at the time Carbone was written, Carbone clearly meant a liquid substance when using the term pepper.

35. Thus, in the context of its description within the Carbone patent and as understood in law enforcement at the time of the Carbone patent, it is my opinion that the term "pepper" refers to a liquid substance. Even today, it is my opinion that the term pepper is understood by most law enforcement communities to refer to a liquid substance.

36. As I am advised I must, I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patents issuing thereon, or any patent to which this Declaration is directed.

  
Charles N. Mills

Dated: 7-16, 2001

Attachments: Exhibit A

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